

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 Claim 1 (previously presented): An apparatus for thermally treating at
2 least one intervertebral disc, comprising:
3 (a) an energy application head having an energy application region
4 and a tissue protecting region;
5 (b) a rounded edge intersection between said energy application
6 region and said tissue protecting region;
7 (c) at least part of said rounded edge intersection being a thin leading
8 edge;
9 (d) said tissue protecting region being sloped from said thin leading
10 edge to a thick region for lifting vulnerable tissues away from a site
11 of energy application to said at least one intervertebral disc; and
12 (e) a control member operationally connected to said energy
13 application head, said control member suitable for controlling said
14 energy application head during treatment of said at least one
15 intervertebral disc.

1 Claim 2 (original): The apparatus of claim 1, wherein said energy
2 application head is wedge-shaped.

1 Claim 3 (original): The apparatus of claim 1, wherein said tissue
2 protecting region has a domed center.

1 Claim 4 (original): The apparatus of claim 1, wherein said energy
2 application region has a smooth surface suitable for gliding over surfaces of an annulus
3 fibrosis without snagging other tissues.
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1 Claim 5 (original): The apparatus of claim 1, said energy application head
2 further comprising at least one instrument selected from the group consisting of:

- 3 (a) a temperature measuring instrument;
- 4 (b) a tissue visualizing instrument
- 5 (c) an energy measuring instrument;
- 6 (d) a distance measuring instrument;
- 7 (e) an area measuring instrument;
- 8 (f) a pressure measuring instrument; and
- 9 (g) a volume measuring instrument.

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1 Claim 6 (original): The apparatus of claim 1, said energy application head
2 further comprising at least one energy applicator selected from the group consisting of:

- 3 (a) a laser;
- 4 (b) a fiber-optic strand;
- 5 (c) a lens;
- 6 (d) an electrode;
- 7 (e) a wire;
- 8 (f) a light bulb;
- 9 (g) a heating element; and
- 10 (h) an ultrasound transducer.

1 Claim 7 (original): The apparatus of claim 1, wherein said energy
2 application head applies energy selected from the group consisting of:

- 3 (a) electric current;
- 4 (b) radio frequency waves;
- 5 (c) microwaves;
- 6 (d) infrared waves;
- 7 (e) visible light waves;
- 8 (f) ultraviolet waves;
- 9 (g) ultrasonic sound waves; and
- 10 (h) conductive thermal energy.

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1 Claim 8 (original): The apparatus of claim 7, said energy further
2 comprising energy in a form selected from the group consisting of:

- 3 (a) incoherent electromagnetic radiation;
- 4 (b) defocused laser energy; and
- 5 (c) collimated laser energy.

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1 Claim 9 (original): The apparatus of claim 1, said tissue protecting region
2 further comprising at least one thermal protector for protecting vulnerable tissues from
3 energy applied by said energy application head.

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1 Claim 10 (original): The apparatus of claim 9, wherein said at least one
2 thermal protector is selected from the group consisting of:

- 3 (a) at least one layer of insulation;
- 4 (b) airflow coolant;
- 5 (c) liquid coolant;
- 6 (d) coolant from a refrigeration system;
- 7 (e) a thermocouple; and
- 8 (f) a heat-pipe.

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1 Claim 11 (original): The apparatus of claim 1, said control member further
2 comprising at least one member selected from the group consisting of:

- 3 (a) a wire;
4 (b) a fiber-optic strand;
5 (c) one or more hollow tubes;
6 (d) a radio control mechanism;
7 (e) a moving mechanical link; and
8 (f) a beam of light;
9 (g) a lumen for adding and removing instruments;
10 (h) a lumen for adding and removing tissue; and
11 (i) a lumen for irrigating.

12
1 Claim 12 (previously presented): An apparatus for thermally treating at
2 least one intervertebral disc, comprising:

- 3 (a) an energy application head having an energy application region
4 and a tissue protecting region;
5 (b) a thin leading edge formed at the anterior portion of a rounded
6 edge intersection between said energy application region and said
7 tissue protecting region;
8 (c) said tissue protecting region being sloped away from said energy
9 application region and from said thin leading edge to a thick region
10 for lifting vulnerable tissues away from a site of energy application
11 to said at least one intervertebral disc; and
12 (d) a control member operationally connected to said energy
13 application head, said control member suitable for controlling said
14 energy application head during treatment of said at least one
15 intervertebral disc.

1 Claim 13 (original): The apparatus of claim 12, wherein said energy
2 application head is wedge-shaped.

1 Claim 14 (original): The apparatus of claim 12, wherein said tissue
2 protecting region has a domed center.

1 Claim 15 (original): The apparatus of claim 12, wherein said energy
2 application region has a smooth surface suitable for gliding over surfaces of an annulus
3 fibrosis without snagging other tissues.

1 Claim 16 (previously presented): An apparatus for thermally treating at
2 least one intervertebral disc, comprising:

- 3 (a) an energy application head having an energy application region
4 and a tissue protecting region;
5 (b) a thin leading edge formed at the anterior portion of a rounded
6 edge intersection between said energy application region and said
7 tissue protecting region;
8 (c) said tissue protecting region being sloped away from said energy
9 application region and from said thin leading edge to a thick region
10 for lifting vulnerable tissues away from a site of energy application
11 to said at least one intervertebral disc.

1 Claim 17 (original): The apparatus of claim 16, wherein said energy
2 application head is wedge-shaped.

1 Claim 18 (original): The apparatus of claim 16, wherein said tissue
2 protecting region has a domed center.

1 Claim 19 (original): The apparatus of claim 16, wherein said energy
2 application region has a smooth surface suitable for gliding over surfaces of an annulus
3 fibrosis without snagging other tissues.

1 Claim 20 (previously presented): An apparatus for thermally treating at
2 least one intervertebral disc, comprising:

- 3 (a) an energy application head having an energy application region
4 and a tissue protecting region;
5 (b) a control member operationally connected to said energy
6 application head, said control member suitable for controlling said
7 energy application head during treatment of said at least one
8 intervertebral disc;
9 (c) said energy application head further comprising a rounded thin
10 leading edge at the anterior intersection of said energy application
11 region and said tissue protecting region; and
12 (d) said tissue protecting region sloped away from said energy
13 application region and to a thick region for lifting vulnerable tissues
14 away from a site of energy application to said at least one
15 intervertebral disc.

1 Claim 21 (original): The apparatus of claim 20, wherein said energy
2 application head is wedge-shaped.

1 Claim 22 (original): The apparatus of claim 20, wherein said tissue
2 protecting region has a domed center.

1 Claim 23 (original): The apparatus of claim 20, wherein said energy
2 application region has a smooth surface suitable for gliding over surfaces of an annulus
3 fibrosis without snagging other tissues.

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1 Claim 24 (previously presented): A method for epidurally treating at least
2 one intervertebral disc using a disc refurbisher, said method comprising the steps of:

- 3 (a) gaining access to a vertebral column;
4 (b) inserting a thin leading edge formed at the anterior portion of a
5 rounded edge intersection between an energy application region
6 and a tissue protecting region of an energy application head of said
7 disc refurbisher;
8 (c) epidurally approaching the posterior aspect of said at least one
9 intervertebral disc;
10 (d) lifting vulnerable tissues using said tissue protecting region, said
11 tissue protecting region being sloped away from said energy
12 application region and from said thin leading edge to a thick region;
13 and
14 (e) applying energy to a posterior aspect of said at least one
15 intervertebral disc using said energy application region.
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1 Claim 25 (previously presented): A method for thermally treating an
2 intervertebral disc while thermally protecting vulnerable tissues, said method comprising
3 the steps of:

- 4 (a) providing a disc refurbisher, said disc refurbisher comprising:
5 (i) an energy application head having an energy application
6 region and a tissue protecting region;
7 (ii) a thin leading edge formed at the anterior portion of a
8 rounded edge intersection between said energy application
9 region and said tissue protecting region;
10 (iii) said tissue protecting region being sloped away from said
11 energy application region and from said thin leading edge to
12 a thick region for lifting vulnerable tissues away from a site of

- 13 energy application to said at least one intervertebral disc;
14 and
15 (iv) a control member operationally connected to said energy
16 application head, said control member suitable for controlling
17 said energy application head during treatment of said
18 intervertebral disc;
19 (b) gaining access to a vertebral column;
20 (c) epidurally approaching the posterior aspect of said at least one
21 intervertebral disc using said control member to position said
22 energy application head;
23 (d) evaluating an extent of disc injury and calculating an amount of
24 energy needed to thermally refurbish said at least one intervertebral
25 disc;
26 (e) applying energy using said disc refurbisher to a posterior aspect of
27 said at least one intervertebral disc while maintaining a safe
28 temperature in said vulnerable tissues near said at least one
29 intervertebral disc;
30 (f) monitoring an amount of energy delivered and a temperature in
31 said vulnerable tissues near said at least one intervertebral disc;
32 (g) observing and evaluating an amount of shrinkage and
33 strengthening of said at least one intervertebral disc to determine
34 an intensity and duration of further energy delivery; and
35 (h) verifying that said shrinkage and strengthening of said at least one
36 intervertebral disc is mechanically successful.
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